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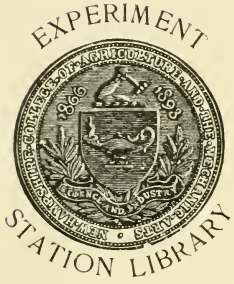

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THE CARE OF COMPOSITE MILK SAMPLES

BY IVAN COMINGS WELD

A composite sample of milk is a sample made up of two or more smaller samples of milk taken from the same source of supply, but taken at different times and from milk produced at different periods. On the farm these small samples represent different milkings from the same cow and the samples in this mixed condition are to represent the milk of that cow for a given period. In the creamery the small samples are to represent the daily delivery of a patron and the combined or composite sample is to represent the daily deliveries of that patron for a given time. This period of time usually extends from seven to fourteen days and the pint or so of milk collected in small amounts during this time forms the composite sample.

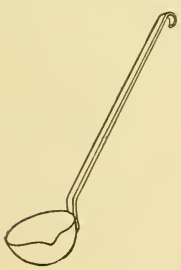

FIG. 1.

This method of collecting samples of milk to be tested is to be recommended, because it has been shown that by its use accurate determination of the fatty contents of milk or cream can be made with a smaller expenditure of time and money.

The per cent. of fat in the milk produced by individual cows varies greatly. The mixed milk of individual cows, or the milk of a herd does not vary so greatly in its composition because the higher per cent. of fat in the milk of one cow may for a day offset the lower per cent. of fat in the milk of some other member of the herd, and *vice versa*, but even under these conditions the variation in the per cent. of fat in the milk of a herd may be considerable from day to day.

It is, therefore, unsafe and unjust to assume that the product of any one day will accurately represent the product of any other day. When a small portion of each day's milk is taken and carefully mixed with similar samples representing the product of other days, and the mixed milk is tested, we may expect to accurately determine the per cent. of fat in the milk which a cow is producing at that period of lactation, or the per cent. of fat in milk which a dairy farmer may be furnishing a creamery.

FIG. 2.

In securing and preserving composite samples of milk or cream, it will be well to observe the following points: The milk or cream must be thoroughly mixed by pouring from one pail or can to another several times to evenly mix the butter fat with the milk serum. A small dipper (Fig. 1) may be used to further agitate the milk. This dipper should have a solid metal handle for convenience in cleaning and the capacity should be about one ounce, or just large enough for measuring the desired sample into the jar in which it is to be preserved. By using the same dipper an approximately equal amount of milk may be taken at each milking, or at each delivery, until the composite sample is complete. Several cans or jars may be successfully used for composite samples, but naturally some are better adapted for this particular purpose than are others. The first essential is that the jar be practically air tight, otherwise a small amount of water may evaporate or be taken up by the atmosphere, thereby slightly increasing the per cent. of fat in the milk or cream that remains in the jar. The second essential is that the jar be as simple as possible, that it have few parts, and preferably no parts of metal or rubber. The third essential is that the jar have a wide mouth, which can be easily and quickly opened and closed, to admit of rapid work in handling samples.

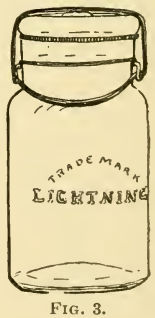

FIG. 3.

Fig. 2 shows the common "Mason" jar, which is least desirable for the purpose. Fig. 3 shows the "Lightning," which is but little better than Fig. 2. Fig. 4 shows a glass jar with metal top. This jar is not desirable for the pur-

pose, because of its metal parts and the more or less loosely-fitting cover. Fig. 5 is an all glass jar, consisting of only two parts and is practically air tight, and is an ideal jar in which to preserve composite samples of milk.

It is necessary that the milk be kept in its natural liquid condition until the composite sample is complete and ready for testing. Changes in milk are due to the presence and development of bacteria. To prevent these changes all, or nearly all, bacteria in the milk samples must be killed. For the purpose of destroying bacteria various inexpensive chemicals or preservatives may be employed. Among the liquid preservatives that may be used for this purpose, a 40% solution of formalin may be recommended. The same amount of formalin placed in different jars of milk taken from the same supply, and the milk kept under the same conditions of temperature will not always produce exactly like results in a given time. Information obtained in preserving several hundred composite samples of milk warrants the following statements:

FIG. 4.

FORMALIN.

Under ordinary conditions of temperature, varying from 50 to 80 degrees F., four or five drops of formalin will keep a pint of ordinary milk or cream in a good liquid condition for from nine to eleven days. Six or seven drops will preserve a pint of milk for from ten to fourteen days. Eight to ten drops will preserve the same amount of milk for a period of from fourteen to twenty days. A larger amount of formalin may be successfully used for preserving milk or cream for a longer period.

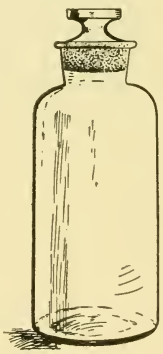
FIG. 5.

POTASSIUM BICHROMATE, OR "BICHROMATE OF POTASH."

Among the dry or powdered preservatives to be recommended for preserving milk and cream samples, Potassium Bichromate has proved to be very satisfactory in every instance. This chemical possesses great power as a destroyer of germ life and only very small quantities need be

used. One tenth of a gram, or an amount of the preservative that could be piled on an area one-fourth inch square, is sufficient to preserve a pint of milk in good condition for testing for a period of from two to three weeks. The color of the milk is changed by this chemical to a reddish yellow. Potassium Bichromate is inexpensive and, like formalin, may be purchased of the local druggist.

CORROSIVE SUBLIMATE TABLETS.

Tablets composed of Corrosive Sublimate combined with coloring matter for preserving samples of milk to be tested have recently been placed on the market by some of the dairy supply houses, and when used according to the accompanying directions produce satisfactory results. Undoubtedly a preservative in tablet form possesses a distinct advantage over others for general purposes, as the proper amount of preservative can always be had without measuring.

In using preservatives, the entire amount should be added to the first lot of milk placed in the sample jar.

The preservative should be completely dissolved at once and thoroughly mixed with the milk.

Every time a new lot of milk is added to the sample the same should be thoroughly mixed with the older milk. Bottles and contents should also be shaken often enough to prevent the fat in the milk rising and forming a thick, tough layer of cream on the surface.

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